

ABSTRACT

An  $\alpha$ -glucan phosphorylase having improved thermostability, which obtained by modifying natural  $\alpha$ -glucan phosphorylase, and a method for producing this  $\alpha$ -glucan phosphorylase having improved thermostability are provided. The natural  $\alpha$ -glucan phosphorylase is derived from a plant, this  $\alpha$ -glucan phosphorylase having improved thermostability has an amino acid residue which is different from that of the natural  $\alpha$ -glucan phosphorylase in at least one position selected from the group consisting of a position corresponding to position 4 in a motif sequence 1L or 1H, a position corresponding to position 4 in a motif sequence 2, and a position corresponding to position 7 in a motif sequence 3L or 3H, and wherein the enzyme activity of  $\alpha$ -glucan phosphorylase having improved thermostability at 37°C, after heating in a 20 mM citrate buffer (pH 6.7) at 60°C for 10 minutes, is 20% or more of the enzyme activity of the  $\alpha$ -glucan phosphorylase having improved thermostability at 37°C, before heating.